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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,050	06/02/2000	Todd O. Bolken	MICS:0038	5710

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EXAMINER

TRAN, THANH Y

ART UNIT	PAPER NUMBER
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2841

DATE MAILED: 10/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/586,050

Applicant(s)

BOLKEN ET AL.

Examiner

Thanh Y. Tran

Art Unit

2841

-- Th MAILING DATE of this communication app ars on th cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-17, 19-33 and 35-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-17 and 19-32 is/are allowed.
- 6) ☒ Claim(s) 33 and 35-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Applicant's arguments with respect to claims 35-63 have been considered but are moot in view of the new ground(s) of rejection.

With respect to claim 33, upon further consideration the preamble limitation is not considered to be limiting in a patentable sense. The rejection has been changed from a 103 to a 102 but the issues are the same as the prior rejection.

A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 33 is rejected under 35 U.S.C. 102(e) as being anticipated by Schmidt et al (U.S. 5,988,511).

With respect to claims 33, Schmidt et al. discloses a system (see Figs. 4-5) a plurality of packages (1), each of the plurality of packages (1) comprising a plurality of non-metal mateable

Art Unit: 2841

alignment features (7, Figs. 2 & 4), and wherein each of the plurality of packages (1) is coupled to another of the plurality of packages (1); and a plurality of memory chips (25), each of the plurality of memory chips (25) coupled to a respective one of the plurality of packages (1) (see Figs. 4-5, col. 2, lines 23-30 and col. 3, lines 19-27).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 35-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (U.S. 5,988,511) in view of Corisis et al (U.S. 6,331,939).

With respect to claims 35, 48 and 55, Schmidt et al does not disclose each package comprises a molded resin body having a die side and a ball side. Corisis et al teaches a system (Fig. 1) comprising a plurality of vertically stacked ball grid arrays (28); each of the plurality of packages comprises a molded resin body (26) having a die side and a ball side. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system of Schmidt et al. by including a plurality of vertically stacked ball grid arrays as taught by Corisis et al for the purpose of electrically interconnecting each adjacent package.

With respect to claim 36, Schmidt et al discloses a system (Figs. 4-5) wherein each package comprises a plurality of first mateable alignment features (7, Figs. 2-4) on the die side of

Art Unit: 2841

the package (1); and a plurality of second mateable alignment features (7, Fig. 2) on the other side of the package (1).

Schmidt et al does not disclose each package comprises a ball side. Corisis et al teaches a system (Fig. 1) comprising a plurality of vertically stacked ball grid arrays (28); and each of the plurality of packages comprises a ball side. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system of Schmidt et al by including a plurality of vertically stacked ball grid arrays; and each of the plurality of packages comprises a ball side as taught by Corisis et al for the purpose of electrically interconnecting each adjacent package.

With respect to claims 37-40, 49-52 and 56-59, Schmidt et al discloses a system (Figs. 4-5) wherein the plurality of first mateable alignment features (7, Figs. 2-5) are male and the plurality of second mateable alignment features are female; the plurality of first mateable alignment features are male and the plurality of second mateable alignment features are male; the plurality of first mateable alignment features are female and the plurality of second mateable alignment features are male; and wherein the plurality of first mateable alignment features are female and the plurality of second mateable alignment features are female (as shown in figure 4).

With respect to claims 41 and 60, figures 4 and 5 of Schmidt et al show the plurality of first mateable alignment features (7) and the plurality of second mateable alignment features (7) orient adjacent packages in a unique location.

With respect to claims 42 and 61, figure 5 of Schmidt et al shows the plurality of first mateable alignment features and the plurality of second mateable alignment features are arranged asymmetrically (see labeled features in figure 5).

Art Unit: 2841

With respect to claims 43 and 62, figures 4 and 5 of Schmidt et al show the plurality of first mateable alignment features and the plurality of second mateable alignment features comprising of at least one unique alignment feature.

With respect to claims 44 and 63, figures 4 and 5 of Schmidt et al show the plurality of first mateable alignment features and the plurality of second mateable alignment features support adjacent packages (1).

With respect to claims 45-46, Schmidt et al does not teach a system comprising each plurality of packages is electrically coupled to another of the plurality of packages using solder balls; each of the plurality of packages comprises vias extending therethrough to connect solder balls of adjacent packages serially. Corisis et al teaches a system (Fig. 1) comprising each plurality of packages (10) is electrically coupled to another of the plurality of packages using solder balls (28); each of the plurality of packages comprises vias extending therethrough to connect solder balls of adjacent packages serially (see Figs. 9-11). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system of Schmidt et al. by including a plurality of packages is electrically coupled to another of the plurality of packages using solder ball as taught by Corisis et al for the purpose of electrically interconnecting each adjacent package.

As to claims 47 and 54, Schmidt et al. discloses a device (Figs. 3-5) comprising a chip (25, Fig. 3); and a package (1) operatively coupled to the chip (25), the package (1) comprising: a die side; a plurality of first mateable alignment features (7, Figs. 2-4) on the die side of the package; and a plurality of second mateable alignment features on the other side of the package (7, Fig. 3).

Art Unit: 2841

Schmidt et al does not disclose each package comprises a ball side. Corisis et al teaches a system (Fig. 1) comprising a plurality of vertically stacked ball grid arrays (28); and each of the plurality of packages comprises a ball side. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the system of Schmidt et al by including a plurality of vertically stacked ball grid arrays; and each of the plurality of packages comprises a ball side as taught by Corisis et al for the purpose of electrically interconnecting each adjacent package.

As to claim 53, Schmidt et al. discloses a device (Figs. 3-5) wherein each of the plurality of memory chips (25) coupled to a package (1).

Allowable Subject Matter

5. Claims 1, 3-17, and 19-32 are allowed.

The following is an examiner's statement of reasons for allowance: In claims 1, 3-17 and 19-32, the patentability is a combination of: A system comprising a processor; a memory device operatively coupled to the processor, the memory device comprising a plurality of vertically stacked carriers, each ball grid array having a memory chip, and wherein the vertically stacked carriers comprise: a plurality of packages, each of the plurality of packages comprising a plurality of non-metal mateable alignment features, and wherein each of the plurality of packages is physically coupled to another of the plurality of packages; and a plurality of memory chips, each of the plurality of memory chips physically coupled to a respective one of the plurality of packages.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

Art Unit: 2841

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2841

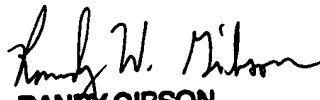
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (703) 305-4757. The examiner can normally be reached on Monday through Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin, can be reached on (703) 308-3121. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TYT


RANDY GIBSON
PRIMARY EXAMINER